

OBSERVATIONS

AND

REMARKS

Upon the intended

ALTERATION

OF OUR

STYLE and CALENDAR,

And upon the

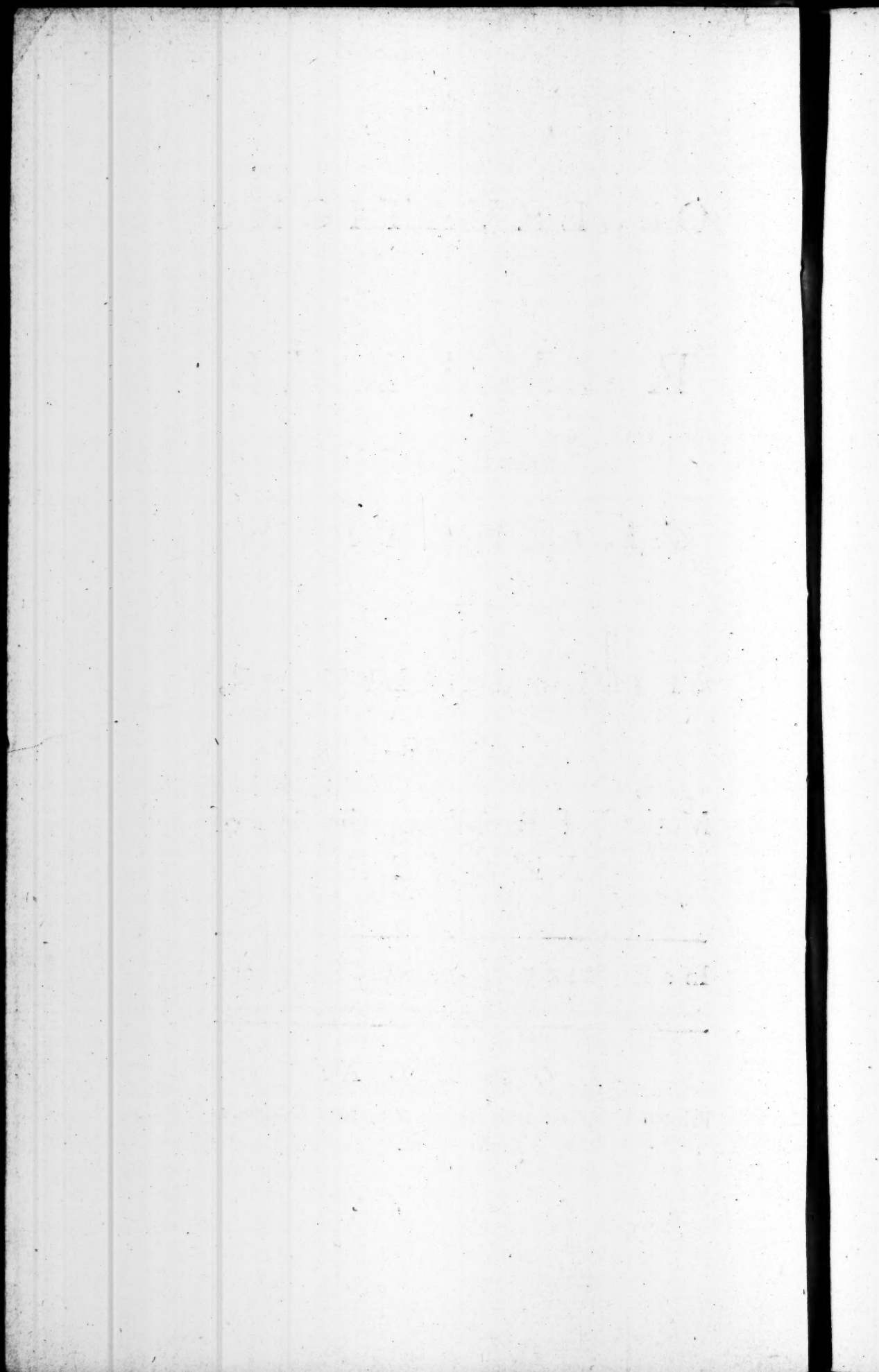
Method of Rectifying the Seat of
EASTER.

In a LETTER to a Member of Parliament.

L O N D O N:

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O B S E R V A T I O N S

A N D

R E M A R K S, &c.

S I R,

AS the Bill now depending in your House for the altering the Style has been but once read, and as you have desired my Thoughts thereon before a second Reading, I shall give you them in as succinct a Manner as the Nature of the Subject will admit; for indeed the changing of our Stile is a Matter of very great Importance to all the *British* Dominions, and I wish I

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had

had had the Opportunity of informing you of my Opinion in this Affair before.

It appears by the Bill, that both the Civil and Ecclesiastical Years are to be rectified, which undoubtedly have Need of it; and I am glad to find these Affairs have fallen under the Consideration of two most eminent Personages *, and that now through their Means they are become the Consideration of the *British* Nation in general; therefore according to the best of my Abilities I shall set forth and explain this Matter to you, and shall remark, in the Course of my Observations herein, whatever of Moment occurs and offers itself to me.

In the first Place I shall speak of the Civil Year, or Year which we at present use in regard to Civil Affairs, instituted by *Julius Cæsar* 45 Years before Christ.

* The Earls of *Chesterfield* and *Macklesfield*.

This Year consists of 365 Days 6 Hours, at a Medium, and these 6 Hours in 4 Years amount to a Day, wherefore every 3 Years were successively made to consist of 365 Days each, but every 4th Year of 366 Days, which Year is call'd Leap Year, and this is the Form of our *Julian* Years which we at present continue.

Now the true Tropical, or Solar Year, is the Time the Sun (or rather the Earth according to the *Copernican* System) takes to go from one Point of the Ecliptick to the same again, and contains, according to the latest and best Observations $365^d : 5^h : 48' : 57''$.

There have been various Determinations by different Astronomers of the Quantity or Length of a Tropical or Solar Year ; for Instance,

Ptolemy

Ptolemy about the Year } D H ' "
 of Christ 140, made it to } 365 : 5 : 55 : 12
 contain — — — }

Copernicus about the } 365 : 5 : 47 : 29
 Year of Christ 1530 }

But the Quantity or Length was nicely determin'd some few Years since at *Greenwich*, from the Observations of the late Dr. *Flamsteed* and others, and it was found to contain $365^d : 5^h : 48' : 57''$ as first before-mentioned.

The Difference between this Tropical or Solar Year, and our *Julian* Year of 365 Days 6 Hours, is (as may be observed) very considerable, and will in about 130 Years amount to a Day.

	D	H	'	"
For from —	365	6	00	00
take —	365	5	48	57
the remainder } or difference is }	0	0	11	3

in one Year.

Therefore

Therefore by the Rule of Proportion as

Year Day

11 : 3 : 1 :: 1 : 130 Years nearly.

Pope *Gregory*, with the Advice of *Lilius* a Mathematician, in the Year 1582 undertook to correct the Error of *Julius Cæsar*, but they looked back no further than the Council of *Nice*, which was held in the Year of Christ 325, when the said Council regulated the Time of the Celebration of *Easter*, and accordingly 10 Days were struck out of the *Julian* Calendar, and the 11th of *March* became the 21st, and the 12th the 22d, &c. And to make the Civil Year for the future agree with the Tropical or Solar, it was ordained that every 100th Year of the *Julian* Account, which should be *Bissextile*, or Leap Year, should be but a common Year for three Centuries successively, and the fourth Century to remain *Bissextile*, or Leap Year, and so on continually.

This

This Form is intended by the Bill now in your House, and that the Years of our Lord 1800, 1900, shall be common Years of 365 Days each, (which in the *Julian* Style will be Leap Years) but that the Year 2000 shall be Leap Year, and shall contain 366 Days. Then again 2100, 2200, 2300 shall be common Years of 365 Days each, but the Year 2400 shall be Leap Year, and contain 366 Days, and so on for every 400 Years to come after, exactly agreeable to the *Gregorian* Account.

According to this Method of computing the Years, we shan't differ from the Tropical or Solar Year, more than one Day in 5974 Years, as shall be proved from Mr. *Whiston's* Astronomical Tables, whose Solar Tables I believe are as correct as any extant.

The

The mean Motion of Deg. "
 the Sun in 400 *Julian* }
 Years, above 400 Revolu- } 3:01:22
 tions, is — — — }

From which if you sub- }
 tract the mean Motion of }
 the Sun in 3 Days (which }
 are to be taken out of the } 2:57:25
Julian Account in 400 }
 Years, according to the }
 aforesaid Form) *viz.* }

The Remainder will be 0:03:57 the
 Anticipation in 400 Years, which in Time
 is 1^h:36':25".

H " " Years Day
 Therefore as 1:36:25:400 :: 1:5974
 Years as before-mentioned.

This Difference is so small in so great
 Length of Time, that no Correction of it
 B is

is at all necessary, tho' many have proposed to subtract a Day out of every 130th Year of the *Julian* Account, to make our Year agreeable to the Tropical; and tho' perhaps that would be something more correct, we should then lose the main Point, that is, to agree with the Inhabitants of most of the other Parts of *Europe*, which at this Time use the *Gregorian* Account. And as far as I can see there has been sufficient Care taken in the Bill that no Inconvenience shall arise from the cutting off 11 Days from our Calendar, which must be done to make our Time agreeable to that of other *European* Countries.

As to what has been published in a late Pamphlet concerning the great Chasm it will make in the Year, and the Change of the Seasons, I think that but of little Signification, and scarce deserving to be noted, for 'twill be exceeding easy for any one to make an Allow-
ance

ance of 11 Days upon any extraordinary Occasion; and as to Agriculture and Gardening, I must observe that it depends more upon the Nature of the Soil, Clemency and Inclemency of the Weather, than the precise Day of the Month; besides the Chasm will not be so great, neither will the Seasons be much varied from the Days they were on before this Alteration; and as to what Difference there is made by it, 'twill be rather in Favour of the Alteration; because it will bring the four grand Quarters of the Year nearer, and more agreeable to the Seasons; for *Midsummer Day*, viz. the 24th of *June*, will be near the Summer Solstice, or longest Day, which in the intended new Calendar will be the 21st of *June*; so likewise *Christmas Day*, viz. *December* the 25th, will be near the Winter Solstice, or shortest Day, which will fall on *December* the 22d; also *Lady-Day* and *Michael-*

mas-Day, will be pretty near the Times of the Vernal and Autumnal Equinoxes.

We shall likewise be more correct in the Anniversary Feasts of the Holy Apostles and Saints.

But I must beg Leave to observe that there are four Solemn Days kept annually, *viz.* the 5th of *November*, being the Day of the Popish Conspiracy; the 30th of *January*, being the Day of the Martyrdom of King *Charles I.* the 29th of *May*, being the Birth and Restoration of King *Charles II.* and the 11th of *June*, being the Day on which His Majesty began his happy Reign; all which if they should stand upon the same nominal Dates in the new Calendar, will be kept nearly 11 Days before the Determination of their Years*: For since

* The Fire of *London* in the Year 1666, might be mentioned too.

the Year 1605, in which Year the Popish Plot was, and 1649, the Year in which the Martyrdom of King *Charles I.* happened; and 1660, the Year in which King *Charles II.* was restor'd; and 1727, in which Year his present Majesty began his happy Reign, there has been but little Difference between the Solar and Civil Year; therefore if the respective Days of those respective Years, are kept on the same Nominal Dates in the intended new Calendar, they will be kept near 11 Days before they should. But whether this needeth any Correction, I shall leave to those who are better Judges of the Matter than myself, and shall suggest something to you for the present concerning the Celebration of the Paschal Feast, or *Easter*, which has never been kept by Christians regularly, since our Saviour's Resurrection, and I doubt much whether it ever will, unless an incontestable Rule was establish'd.

From

From the Beginning, different Churches or Assemblies of Christians kept the Paschal Feast, or *Easter*, at different Times, for in their Opinions they differ'd concerning the Practice of the Apostles about the Celebration of *Easter*, insomuch that great Disputes arose between the Eastern and Western Churches, which were carried to a shameful Excess.

In the Year of Christ 325, in the Time of the Emperor *Constantine* the Great, the *Nicenē* Council assembled in order to fix a Rule for determining *Easter*, and to prevent any Contention for the future between the Churches, they agreed that *Easter* should be celebrated the first *Sunday* after the first Full Moon, which should happen on, or next after the Vernal Equinox; and fix'd the Vernal Equinox on the 21st of *March*, thinking it would always continue so, tho' the Vernal Equinox really happen'd then on the
20th

20th of *March*, as may be found by Astronomical Computation; but it is to be consider'd that Astronomy has since been much improved, and both the Tropical Year and a mean Lunation have been curiously determined, and from those mean Motions, with the Assistance of a few Equations, the true Time of the Vernal Equinox, and of the succeeding Full Moon may be determin'd, which ought to be settled, in order for fixing the Seat of *Easter*.

The Time of *Easter* was, for some Years after the Council of *Nice* had settled a general Rule, computed yearly by the Bishop of *Alexandria*, who at that Time was the best Astronomer of all the Ecclesiasticks, and by him Notice of it was sent to *Rome*, and from thence was sent to all the Christian Churches, 'till *Dionysius Exiguus*, Abbot of *Rome*, revived the *Metonic* Cycle, or Golden Number, by which, and the Dominical Letter,

ter, Tables have been made for finding of Easter, which Tables have been our Guide to this Day, and are to be found in all our Common Prayer Books.

But this *Metonic* Cycle, or Golden Number, does not shew the Time of the New or Full Moon exactly, for since the fifth Century from Christ (about which Time it was first used in finding of *Easter*) it has varied from the true Lunations, about four Days. And the Vernal Equinox which the Council of *Nice* supposed on the 21st of *March*, happens now on the 9th of *March*, by which means *Easter* is often celebrated by us at very different Times from the Intention of the Council of *Nice*.

Pope *Gregory* in order to reconcile these Errors, and to put the Civil Year and the Feast of *Easter* upon a better Foundation; in the Year 1582 struck ten Days out of the Calendar, and instituted the form of Years before-mentioned, and indiscreetly
fix'd

the Vernal Equinox on the 21st of *March* to regulate *Easter* by, as the Council of *Nice* (for want of more Knowledge in Astronomy) had done before, and also rejected the Golden Number, and substituted in the Room thereof, a great Number of Epacts, which are indeed less fallacious than the Golden Number, but are sometimes liable to Errors: For in the Year 1666, *Easter* was celebrated by the Papists on the 25th of *April*, when it ought to have been kept the 21st of *March*, for in that Year the Vernal Equinox happen'd *March* the 20th in the Morning, and the Paschal Full Moon happen'd on the same Day in the Afternoon, which was on *Saturday*, therefore *Easter* ought to have been kept the next Day, viz. *Sunday, March 21*, agreeable to the Intent of the Council of *Nice*. Whereas the *Gregorian*, or *Roman* Epact pointed out the Full Moon that happen'd on the 19th of *April* following to be the next Full Moon after the Vernal Equinox, and the *Roman* Catholick, celebrated *Easter*

accordingly on *April* the 25th, which was five Weeks too late. And in the Year 1685 another Error of the like Nature happen'd, which are Instances sufficient to shew the defect of Pope *Gregory's* Method, and are plain Demonstrations that he was not infallible.

The Manner of the Pope's disposing his Epacts is very intricate, they not proceeding in regular Order ; for in the Year 1700 they went from their regular Course, and will again in the Year 1900 ; besides they differ sometimes near two Days from the true Lunations, and consequently will sometimes point out *Easter* very wrong.

It seems the Method of finding *Easter* in the New Ecclesiastical Calendar is intended to be near the same as that of Pope *Gregory*, for all the Difference designed, is, that instead of the Pope's Epacts, we shall use the Golden Number, which will exactly answer the same End as those Epacts, and

and as those Epacts sometimes change their Course, the Golden Number will also change its Course, about three Times in 600 or 670 Years. And this Golden Number is so contrived as to shew *Easter* exactly at the same Time as the Epacts of Pope *Gregory*, therefore this Method is in effect the same as the *Roman* Method.

For my own Part I'm surprized to find that the very Learned and eminent Mathematicians * should Copy after the intricate and incorrect Rules of Pope *Gregory*, when a better, easier and more intelligible Method may be practised.

For tho' those Rules of the Pope may find *Easter* for many Years, agreeable to Astronomical Calculation, yet they are not justifiable; for *Easter* has several Times by those very Rules been kept wrong (as I have

* *Martin Folkes*, Esq; President of the *Royal Society*; *Dr. Bradley*, his Majesty's Professor of Astronomy; *Mr. Duvall*, Barrister in the *Temple*.

before-mentioned two Instances of it) and certainly will be kept wrong again some Years hence.

Therefore if it was order'd that *Easter* should always for the future be celebrated the first *Sunday* after the first Full Moon, on or next after the Vernal Equinox, according to Astronomical Calculation; then we should have a permanent Rule, not only quite different and free from the Errors of Pope *Gregory*, but more agreeable to the Intent of the *Nicene-Council*, and to the Time of our Saviour's Resurrection. And to prevent any Misunderstanding in the Rule, if the Paschal Full Moon should happen on a *Sunday*, I let *Easter Sunday* be the *Sunday* after, because it mayn't fall in with the Passover of the *Jews* any more than it needs must; and if the Pope had taken this Method in rectifying the Seat of *Easter*, I dare say it would have been practised in all the Christian Churches in *Europe* before now.

For

For we have the very best Authority, that Christ suffer'd and rose again at the Time of the *Jewish* Passover, which was celebrated the 14th Day of the Month *Nison*, which Month of the *Jews*, always begins with the New Moon, nearest, or upon the Vernal Equinox,

Besides, it is the Opinion of some very eminent Men *, that if our Time of the

“ * Dr. *Whiston* in his Apostolical Constitu-
 “ tions (which Constitutions deserves more Re-
 “ gard than is paid to them by many at pre-
 “ sent) remarks that the Full Moon next after
 “ the Vernal Equinox, should fall into Passion
 “ Week.

“ Dr. *Wallis* in 1699, in a Letter to Bishop
 “ *Loyd*, says, if in the Rule for *Easter*, instead of
 “ the Sunday next after the 21st of *March*, you
 “ say the next after the Vernal Equinox, the
 “ Work is done (and we might be excused the
 “ Trouble of Paschal Tables, and the intricate
 “ Perplexities of the *Gregorian* Epacts) for then
 “ every Almanack will tell you when it is Equi-
 “ nox, and when it is Full Moon for the present
 “ Year.”

Celebration

Celebration of *Easter* was to be rectified, it would be best to regulate it from the true Time of the Vernal Equinox and the next Full Moon after.

We should certainly then, as Dr. *Wallis* says, get rid of the intricate Perplexities of the *Gregorian* Epacts, or Golden Number, which will be put in the New Ecclesiastical Calendar to find *Easter* by.

Besides, Tables may be calculated according to the true Time of the Equinox, and true Time of the Full Moon for 40 or 50 Years, which should shew *Easter* by Inspection, and those Tables may be put into every Edition of our Common Prayer Books.

Likewise this Method of calculating the Time of *Easter*, will never be liable to any Errors or Contention, but always continue agreeable to the Time of the Primitive

mitive Institution, and the Intent of the *Nicene* Council; which Method upon those Accounts only is much more to be valued and had in Esteem than that of the Pope's, which which was meerly imposed upon his People, to shew his absolute Authority over them. Some Foreign Protestants that have embraced the Reformation of the Civil Year, do keep *Easter* now by Astronomical Calculation; and in all Probability the Rest of the Protestants in *Europe*, which do not keep it by Astronomical Calculation, may take that Method after us, for as *Easter* is a moveable Feast, 'tis but altering the general Rule, for the Time of the Celebration, and the Work is done without any Confusion.

As to the making of the Year to commence on the first of *January*, its universal Good to all the Inhabitants of his Majesty's Dominions, is obvious to every
one &

one; and it is a Thing which has been long wish'd for by many.

I shall now conclude, with only wishing that this Affair of rectifying the Seat of *Easter* may be thoroughly considered before the Rule for keeping it is absolutely determined.

I am, &c.

F I N I S.